CLAIMS

What is claimed is:

1. A disc cartridge having a disc where information is recorded and/or reproduced using a disc drive with a probing portion, comprising

a case to rotatably accommodate the disc; and

an identification unit disposed on said case to identify a type of the disc using the probing portion of the disc drive,

wherein the probing portion selectively contacts said identification unit to produce a predetermined sequence of information to determine the type of the disc.

2. The disc cartridge as claimed in claim 1, wherein said identification unit comprises:

an identification opening; and

an identification plate slideably installed in the identification opening.

3. The disc cartridge as claimed in claim 2, wherein:

the identification opening comprises guide grooves having corresponding hooking steps formed at corresponding ends of the identification opening, and

the identification plate comprises hooking portions, wherein each of the hooking portions hooks one of the hooking steps to fix the identification plate at one of the ends of the identification opening.

4. The disc cartridge as claimed in claim 2, wherein the identification plate further includes an adjustment hole at the center of the identification plate, wherein the identification plate slides by inserting a sharpened tip into the adjustment hole.

5. The disc cartridge as claimed in claim 2, wherein said identification unit further comprises additional identification openings having additional corresponding identification plates.

6. The disc cartridge as claimed in claim 2, wherein

said case comprises an upper case and a lower case,

said identification unit further comprises an additional identification opening and corresponding additional identification plate, and

each of the upper case and the lower case includes one of the identification openings and corresponding identification plates.

7. The disc cartridge as claimed in claim 3, wherein

said case comprises an upper case and a lower case,

said identification unit further comprises an additional identification opening and corresponding additional identification plate, and

each of the upper case and the lower case includes one of the identification openings and corresponding identification plates.

8. The disc cartridge as claimed in claim 4, wherein

said case comprises an upper case and a lower case,

said identification unit further comprises an additional identification opening and corresponding additional identification plate, and

each of the upper case and the lower case includes one of the identification openings and corresponding identification plates.

9. The disc cartridge as claimed in claim 5, wherein

said case comprises an upper case and a lower case,

said identification unit further comprises an additional identification opening and corresponding additional identification plate, and

each of the upper case and the lower case includes one of the identification openings and corresponding identification plates.

10. The disc cartridge as claimed in claim 2, wherein

said case comprises a top surface parallel with an information recording surface of the disc and a side surface adjacent the top surface, and

the identification opening is provided at the side surface of said case.

11. The disc cartridge as claimed in claim 3, wherein

said case comprises a top surface parallel with an information recording surface of the disc and a side surface adjacent the top surface, and

the identification opening is provided at the side surface of said case.

12. The disc cartridge as claimed in claim 4, wherein

said case comprises a top surface parallel with an information recording surface of the disc and a side surface adjacent the top surface, and

the identification opening is provided at the side surface of said case.

13. The disc cartridge as claimed in claim 5, wherein

said case comprises a top surface parallel with an information recording surface of the disc and a side surface adjacent the top surface, and

the identification opening is provided at the side surface of said case.

14. A disc drive apparatus to drive a disc rotatably accommodated in a disc cartridge having identification plates, comprising:

a recording/reproduction unit to record and/or reproduce information with respect to the disc rotatably accommodated in the disc cartridge; and

a probing portion to selectively detect the identification plates provided at the disc cartridge to produce a sequence of information to identify a type of the disc.

15. The disc cartridge as claimed in claim 14, wherein said probing portion comprises:

a probing rod to contact the identification plates,

a probing sensor installed at the probing rod, and

a probing switch which is turned one of ON and OFF due to a movement by the probing sensor.

16. A disc identification mechanism to identify a type of a disc in a disc cartridge using a disc drive to record and/reproduce information on the disc and having a probing portion, the mechanism comprising:

identification openings installed at the disc cartridge, each said identification opening having an identification plate slideably attached therein; and

a probing portion installed at the disc drive to identify the type of the disc by detecting positions of the identification plates,

wherein a contact between said probing portion and the identification plates produces a sequence of information to identify the type of the disc.

17. A disc cartridge having an information recording medium and which is received by an apparatus having a probing portion, comprising:

a case to accommodate the information recording medium; and

identification units disposed on said case to be sequentially detected by the probing portion of the apparatus to produce a predetermined sequence of information to determine a type of the information recording medium.

18 The disc cartridge of claim 17, wherein the sequence of the information is produced by a relative motion between said identification units and the probing portion.

19. The disc cartridge of claim 17, wherein said identification units are disposed on said case in a line such that the probing portion detects said identification units during insertion into the apparatus.

20. The disc cartridge of claim 17, wherein said identification units are detectable by a common tip of the probing portion.

21. The disc cartridge of claim 18, wherein:

each of said identification units comprises an identification opening having an identification plate disposed therein, and

a position of the identification plate is detected by the probing portion to indicate a feature used to identify the type of the information recording medium.

22. The disc cartridge of claim 21, wherein the identification plates are slideably disposed in the identification openings, and are fixed in the positions to indicate the type of the information recording medium.

23. The disc cartridge of claim 22, wherein each of said identification units further comprises:

a first interlocking piece disposed at one of the identification plate and the identification opening, and

a second interlocking piece to interlock with the first interlocking piece disposed at the other one of the identification plate and the identification opening.

24. The disc cartridge of claim 23, wherein:

the first interlocking piece comprises a hooking portion, and

the second interlocking piece comprises a groove to securely receive the hooking portion.

25. The disc cartridge of claim 24, wherein the hooking portion is disposed on the identification plate, and the groove is in said case.

26. The disc cartridge of claim 17, further comprising a first positioning unit disposed on said case to be received by a second positioning unit disposed on the apparatus to position the disc cartridge in the apparatus.

27. The disc cartridge of claim 19, further comprising a first positioning unit disposed on said case to be received by a second positioning unit disposed on the apparatus to position the disc cartridge after being inserted into the apparatus.

28. The disc cartridge of claim 27, wherein said first positioning unit comprises a positioning hole and the second positioning unit comprises a positioning pin to be received into the positioning hole.

29. The disc cartridge of claim 18, wherein:

said case further comprises a top side disposed above or below a recording surface of the information recording medium, and

said identification units are disposed on the top side.

30. The disc cartridge of claim 18, wherein:

said case further comprises a top side disposed above or below a recording surface of the information recording medium, and a second side disposed adjacent the top side, and

said identification units are disposed on the second side.

31. A disc drive apparatus to record and/or reproduce data with respect to an information recording medium disposed in a disc cartridge having identification units, the apparatus comprising:

a turntable to receive the information recording medium;

a motor to drive said turntable to turn the information recording medium;

an optical pickup to record and/or reproduce data with respect to the information recording medium;

a controller to control said motor and said optical pickup according to a type of the information recording medium; and

a probing portion to sequentially detect the identification units of the disc cartridge, and to provide the detected information to said controller,

wherein said controller determines the type of the information recording medium according to the detected information.

32. The disc drive apparatus of claim 31, wherein the detected information is in a sequence produced by a relative motion between the identification units and said probing portion.

33. The disc drive apparatus of claim 31, wherein the identification units are disposed on the disc cartridge in a line such that said probing portion detects the identification units during insertion into the disc drive apparatus.

34. The disc drive apparatus of claim 31, further comprising a tray to receive the disc cartridge, wherein said probing portion detects the identification units as the identification units pass by said probing portion while said tray moves the disc cartridge.

35. The disc drive apparatus of claim 31, wherein said probing portion comprises a tip, wherein the tip detects the identification units.

36. The disc drive apparatus of claim 32, wherein said probing portion detects a position of an identification plate of each identification unit to indicate a feature used by said controller to identify the type of the information recording medium.

37. The disc drive apparatus of claim 32, wherein said probing portion is disposed on the disc drive apparatus to detect the identification units disposed on a top side of the disc cartridge, where the top side is disposed above or below a recording surface of the information recording medium.

38. The disc drive apparatus of claim 32, wherein said probing portion is disposed on the disc drive apparatus to detect the identification units disposed on a side of the disc cartridge adjacent to a top side that is disposed above or below a recording surface of the information recording medium.

39. The disc drive apparatus of claim 32, further comprising a tray to receive the disc cartridge, said tray including a guide groove to receive said probing portion,

wherein said probing portion is guided by the guide groove and detects the identification units as the identification units pass by said probing portion while said tray moves the disc cartridge.

40 The disc drive apparatus of claim 31, wherein said probing portion comprises a probing sensor and a probing tip, where the probing tip detects states of each of the identification units and the probing sensor provides the detected states to said controller as the detected information.

41. The disc drive apparatus of claim 40, wherein:

the probing sensor detects a first state if the probing tip contacts an identification plate of the identification unit, and

the probing sensor detects a second state if the probing tip detects an identification opening of the identification unit and does not contact the identification plate of the identification unit.

42. A method of detecting a type of an information recording medium disposed within a disc cartridge using a probing portion of an apparatus, comprising:

passing a first identification unit of the disc cartridge by the probing portion and detecting a first feature of the information recording medium from the first identification unit using the probing portion;

passing a second identification unit of the disc cartridge by the probing portion and detecting a second feature of the information recording medium from the second identification unit using the probing portion; and

determining a type of the information recording medium based upon the detected first and second features.

43. The method of claim 42, wherein:

said passing and detecting the first feature comprises detecting a position of a first identification plate of the first identification unit, and

said passing and detecting the second feature comprises detecting a position of a second identification plate of the second identification unit.

44. The method of claim 43, wherein:

the probing portion comprises a probing tip;

said passing and detecting the first feature comprises:

producing an ON state of the probing portion if the probing tip contacts the first identification plate as the first identification unit passes by the probing portion, and

producing an OFF state of the probing portion if the probing tip detects an opening adjacent the first identification plate as the first identification unit passes by the probing portion;

said passing and detecting the second feature comprises

producing an ON state of the probing portion if the probing tip contacts the second identification plate as the second identification unit passes by the probing portion, and

producing an OFF state of the probing portion if the probing tip detects an opening adjacent the second identification plate as the second identification unit passes by the probing portion; and

said determining the type of the information recording medium comprises detecting a sequence of the ON and OFF states of the probing portion as the probing portion passes the first and second identification units, and matching the sequence to one of predetermined sequences corresponding to types of information recording media.

45. A computer readable medium encoded with processing instructions for implementing a method of detecting a type of information recording medium disposed in a disc cartridge performed by a computer, the method comprising:

receiving a first information signal in response to a first identification unit of the disc cartridge passing by a probing portion of an apparatus and detecting a first feature of the information recording medium from the first identification unit using the probing portion;

receiving a second information signal in response to a second identification unit of the disc cartridge passing by the probing portion and detecting a second feature of the information recording medium from the second identification unit using the probing portion; and

determining a type of the information recording medium based upon the detected first and second features.

46. The computer readable medium of claim 45, wherein

said receiving the first information signal comprises receiving the first information signal in response to the probing portion detecting a position of a first identification plate of the first identification unit, and

said receiving the second information signal comprises receiving the second information signal in response to the probing portion detecting a position of a second identification plate of the second identification unit.

47. The computer readable medium of claim 46, wherein:

the probing portion comprises a probing tip;

said receiving the first information signal comprises:

receiving an ON state of the probing portion if the probing tip contacts the first identification plate as the first identification unit passes by the probing portion, and

receiving an OFF state of the probing portion if the probing tip detects an opening adjacent the first identification plate as the first identification unit passes by the probing portion;

said receiving the second information signal comprises

receiving an ON state of the probing portion if the probing tip contacts the second identification plate as the second identification unit passes by the probing portion, and

receiving an OFF state of the probing portion if the probing tip detects an opening adjacent the second identification plate as the second identification unit passes by the probing portion: and

said determining the type of the information recording medium comprises detecting a sequence of the ON and OFF states of the probing portion as the probing portion passes the first and second identification units, and matching the sequence to one of predetermined sequences corresponding to types of information recording media.

48. The computer readable medium of claim 45, further comprising:

controlling a reading and/or writing operation of a disc drive apparatus in accordance with the determined type of the information recording medium.

49. The computer readable medium of claim 47, further comprising:

controlling a reading and/or writing operation of a disc drive apparatus in accordance with the determined type of the information recording medium.

50. An apparatus to identify a type of information recording medium, comprising:

a probing portion;

a case to accommodate the information recording medium;

identification units disposed on said case to be sequentially detected by said probing portion to produce a predetermined sequence of information; and

a detection unit to determine the type of the information recording medium using the predetermined sequence of information.

51 The apparatus of claim 50, wherein the sequence of the information is produced by a relative motion between said identification units and said probing portion.

52. The apparatus of claim 50, wherein said identification units are disposed on said case in a line such that said probing portion detects said identification units during insertion into the apparatus.

53. The apparatus of claim 50, wherein said identification units are detectable by a common tip of said probing portion.

54. The apparatus of claim 50, wherein:

each of said identification units comprises an identification opening having an identification plate disposed therein, and

positions of the identification plates are detected by said probing portion to indicate features used by said detection unit to identify the type of the information recording medium.

55. The apparatus of claim 51, wherein:

said case further comprises a top side disposed above or below a recording surface of the information recording medium, and

said identification units are disposed on the top side.

56. The apparatus of claim 51, wherein:

said case further comprises a top side disposed above or below a recording surface of the information recording medium, and a second side disposed adjacent the top side, and

said identification units are disposed on the second side.

57 The apparatus of claim 50, wherein said probing portion comprises a probing sensor and a probing tip, where the probing tip detects states of each of said identification units and the probing sensor provides the detected states to said detection unit.

58. The disc drive apparatus of claim 57, wherein:

the probing sensor detects a first state if the probing tip contacts an identification plate of said identification unit, and

the probing sensor detects a second state if the probing tip detects an identification opening of said identification unit and does not contact the identification plate of said identification unit.